(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 13 January 2005 (13.01.2005)

PCT

(10) International Publication Number WO 2005/003373 A2

(51) International Patent Classification7:

C12Q

(21) International Application Number:

PCT/US2004/019671

(22) International Filing Date: 18 June 2004 (18.06.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/482,684

26 June 2003 (26.06.2003)

(71) Applicant (for all designated States except US): PRO-LIGO, LLC [US/US]; 6200 Lookout Road, Boulder, CO 80301 (US).

- (72) Inventor; and
- (75) Inventor/Applicant (for US only): ARAR, Khalil [LB/FR]; 69 Rue de la Belgique, F-92190 Meudon (FR).
- (74) Agents: SWANSON, Barry, J. et al.; Swanson & Bratschun, LLC, 1745 Shea Center Drive, Suite 330, Highlands Ranch, CO 80129 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PII, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FLUOROGENIC NUCLEIC ACID PROBES INCLUDING LNA FOR METHODS TO DETECT AND/OR QUANTIFY NUCLEIC ACID ANALYTES

(57) Abstract: The present invention relates to novel methods for detecting or quantifying nucleic acid analytes through their interactions with a nucleic acid probe or a pair of nucleic acid probes, wherein the probe or the pair of probes is comprised of at least one monomeric LNA moiety and two or more dyes, wherein at least one of said dyes is fluorescent. Preferably the probe or the pair of probes is comprised of a combination of two dyes, wherein either both are fluorescent dyes that coactively function as the donor dye and the acceptor due of a FRET system, or wherein one of said dues is a fluorescent due and the other is a corresponding non-fluorescent quencher dye. Included in the present invention are novel nucleic acid probes for use in the detection and quantification of analytes according to the methods of this invention. The novel nucleic acid probes of the invention are comprised of an n-meric nucleic acid comprising any number of 1 to n monomeric locked nucleic acid (LNA) moieties that may be located in any position(s) of the nucleic acid sequence. The nucleic acid probes are further characterized in that they are derivatized with one or more dyes, wherein said dyes are independently selected from fluorescent dyes or non-fluorescent quencher dyes. The methods provided by the invention are based on the change of fluorescence resulting from the hybridization of the inventive nucleic acid probes or pairs of nucleic acid probes with nucleic acid analytes.

